

Application No.: 10/662,084Case No.: 55044US009**REMARKS**

Upon entry of the present amendment claims 1 and 4-17 will be pending. Claim 1 has been amended to recite that the fixed abrasive element is textured and three-dimensional. Support for the amendment can be found in claim 2 as filed and, for example, at page 13, lines 10-13, of the specification. Claims 2 and 3 have been canceled.

Claims 13, 14, 16, and 17 have been amended to correct obvious typographical errors and provide further clarity. As requested, the paragraph concerning the cross reference to the related application has been amended to include the issued patent number.

Applicant respectfully requests reconsideration of claims 1 and 4-17 in view of the present amendment and following remarks.

I. Claims 13-17 are Clear and Definite

Claims 13-17 stand rejected under 35 U.S.C. § 112, second paragraph, as allegedly being indefinite. The Office Action has failed to allege a deficiency with respect to claim 15 and Applicant is unaware of any issues of indefiniteness with respect to claim 15. Applicant has amended claims 13, 14, 16, and 17 to correct obvious typographical errors and provide further clarity. No change in claim scope is intended. Accordingly, the rejection of claims 13-17 as allegedly being indefinite should be withdrawn.

II. Claims 1, 4-7, and 14-16 are Not Obvious over Rutherford et al. in view of Breivogel et al.

Claims 1, 4-7 and 14-16 stand rejected under 35 U.S.C. § 103(a) as allegedly being obvious over Rutherford et al. (U.S. Pat. No. 6,007,407) in view of Breivogel et al. (U.S. Pat. No. 5,212,910). Applicant requests reconsideration of this rejection because there is no evidence of record indicating that those of ordinary skill would have been properly motivated to combine them, much less to combine them in a manner that would have produced Applicant's claimed invention.

Applicant's claimed invention provides a fixed abrasive article that is well suited to produce semiconductor wafers that exhibit good surface uniformity. The abrasive article comprises a textured, three-dimensional, fixed abrasive element in combination with a resilient

Application No.: 10/662,084

Case No.: 55044US009

element, and a plurality of rigid segments disposed between the fixed abrasive element and the resilient element.

Rutherford et al. report a fixed abrasive article with a fixed abrasive element, a rigid element, and a resilient element. The rigid element is disposed between the fixed abrasive element and the resilient element. The reported purpose of the resilient element is to allow the abrasive construction to substantially conform to the global topography of the surface of the workpiece while maintaining a uniform pressure on the workpiece (col. 4, lines 35-38). The reported purpose of the rigid element is to limit the ability of the abrasive construction to substantially conform to the local features of the surface of the workpiece (col. 4, lines 53-56). As acknowledged in the Office Action, Rutherford et al. fail to teach or suggest that the rigid element comprise a plurality of rigid segments, and looks to Breivogel et al. for this missing element.

Breivogel et al. also report an article that can be used to modify wafer surfaces. The composite pad reported by Breivogel et al. comprises a first layer of elastic material, a second, stiff layer, and a third layer optimized for slurry transport (Abstract). The Office Action erroneously asserts that Breivogel discloses a "plurality of rigid segments (22) disposed between the fixed abrasive element and the resilient element" (emphasis added). Significantly, the article reported by Breivogel et al. does not include a fixed abrasive element. Rather, a "spongy, porous material which functions as a slurry carrier" is used (col. 4, lines 37-40). Breivogel et al. report it is "desirable to make [slurry carrier] layer 23 highly flexible to as to be able to conform to the localized incongruities of the silicon substrate surface" (col. 4, lines 43-46). These are not the characteristics of a fixed abrasive element.

Breivogel et al. and Rutherford et al. report contradictory requirements for the nature of their respective contacting surface and, therefore, would not be combined by one skilled in the art. The differences in the respective teachings is a consequence, in part, of the different mechanisms employed for abrading the surface of the wafer. Fixed abrasives of the present invention and Rutherford et al. are recognized in the art as distinct from the use of polishing pads for use with abrasive slurries employed by Breivogel et al. The former belong to the technical field of two-body abrasive processes (e.g., fixed abrasives) while the latter belong to the separate technical field of three-body processes (e.g., slurries). One skilled in the art of wafer

Application No.: 10/662,084Case No.: 55044US009

planarization recognizes that planarization processes that utilize a fixed abrasive article are very different from processes that use a polishing pad in combination with an abrasive slurry. Accordingly, there is no reason that one skilled in the art would have combined the teachings of Rutherford et al. with Breivogel et al., much less combined them in a manner that would have produced Applicant's claimed invention.

Further, assuming, *arguendo*, that one were motivated to modify the fixed abrasive article reported by Rutherford et al. to include an element of the slurry polishing pad reported by Breivogel et al., the Office Action fails to provide evidence that one skilled in the art would have a reasonable expectation of success in their combination. For at least these reasons, the rejection of claims 1, 4-7 and 14-16 under 35 U.S.C. § 103(a) as allegedly being obvious over Rutherford et al. in view of Breivogel et al. should be withdrawn.

III. Conclusion

Applicant notes with appreciation the indication of allowable subject matter in claims 8-12, 13, and 17. In view of the above, it is submitted that the application is in condition for allowance. Reconsideration of the application is requested. The Examiner is invited to contact Applicant's undersigned representative with any questions concerning Applicant's application.

Respectfully submitted,

By:



Daniel D. Biesterveld, Reg. No.: 45,898

Telephone No.: (651) 737-3193

October 4, 2005

Date

Office of Intellectual Property Counsel
3M Innovative Properties Company
Facsimile No.: 651-736-3833